UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,053	10/14/2003	William Arthur Welsh	S-5654	5716

7590 10/13/2004

Sikorsky Aircraft Corporation
Legal-IP Dept., Mail Stop S316A
6900 Main Street
Stratford, CT 06615-9129

EXAMINER	
NGUYEN, XUAN LAN T	
ART UNIT	**PAPER NUMBER**
3683	

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/685,053	**Applicant(s)** WELSH ET AL.	
	Examiner Lan Nguyen	**Art Unit** 3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 July 2004*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.
 4a) Of the above claim(s) *3* is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1,2 and 4-11* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *14 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a)☐ All b)☐ Some * c)☐ None of:
  1.☐ Certified copies of the priority documents have been received.
  2.☐ Certified copies of the priority documents have been received in Application No. _____.
  3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Species A in the reply filed on 7/19/04 is acknowledged. Claim 3 has been withdrawn for pertaining to a non-elected species. The Election/Restriction requirement is made FINAL.

Information Disclosure Statement

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement because of the following reasons.

It is unclear what function element 36 serve? For figure 3c, element 36 is an electromagnet for effecting flow of the MRF in the opposite rotational direction of the housing 20. For figure 5, element 36 is not illustrated but mentioned that element(s) 36 is to help with mixing. The invention is about effecting the distribution of the MRF fluid within the housing 20 by energizing coil(s) 28 of the electromagnet(s) 32. By having permanent magnet(s) 36 or electromagnet(s) 36 disposed adjacent the housing 20, the MRF is further affected. However, it is unclear how the MRF is affected by the element(s) 36 alone and in combination with elements 32.

It is unclear of the structure(s) and location(s) of element(s) 32 in relation to the housing 20. From figures 3a, 3b, 3c and 4, it seems that element(s) 32 is located within housing 20 but external to the chamber 22; and is rotating together with housing 20. In figure 5, it is mentioned in the specification that elements 32 are stationary while housing 20 is rotating. It is deduced that elements 32 are stationary and are external of housing 20.

It is required that explanations be provided for the above mentioned reasons in a response to this Office Action.

5. The specification is further objected to because:

- Pages 7 and 8, "32" is used for "electromagnets", "displacement means" and "distribution means".
- Page 9, there are no explanations for "46s and 50s".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 2 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed features "outer fairing and scupper" have not been disclosed nor described in the specification. Due to this enablement deficiency, claim 2 is not further treated in this Office Action.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1, 2 and 4-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- In claims 1 and 5, the term "selectively" renders claim 1 indefinite.
- In claims 4, 6 and 9, "NP" is used as a value for both the vibrations and the absolute rotational speed. It is unclear what is being claimed in claims 4, 6 and 9.
- In claims 7, 8 and 10, the terms "generator/alternator" and "generation/isolation" render these claims indefinite.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Kai et al.

Re: claim 11, Kai shows a method for reducing vibrations in a rotating system, as in the present invention, comprising: enclosing a medium 19 of variable viscosity in a housing connected to the rotating system; sensing a rotational speed of the rotating system, as mentioned in the Abstract wherein the rotational speed of the shaft is temporarily reduced; issuing a control signal responsive to the rotational speed, the control signal activating a means 18 to change the viscosity of the medium; and redistributing the medium within the housing to reduce vibratory loads in the rotating system, by only energizing a certain plate 18 to modify the unbalance of the shaft as mentioned in the Abstract.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 1, 5, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kai.

Re: claim 1, Kai shows an active system for reducing vibrations in a rotating system, as in the present invention, said system having a member, rotating shaft, rotating about an axis of rotation and generating vibratory loads, as illustrated and described in the Abstract, comprising: a housing 14 disposed in combination with the rotating system and defining an internal chamber 17; an Electro Rheological Fluid (ERF) disposed in said chamber, and means 18 for distributing said ERF within said chamber for reducing said vibratory loads active in said rotating system, as stated in the Abstract wherein means 18 is energized to distribute the ERF within the chamber to modify the unbalance of the rotating shaft. Kai lacks the Magneto Rheological Fluid (MRF). The Examiner takes an Official Notice that ERF and MRF are considered equivalents in the art of dynamic dampening; and it would have been within the skills of a person in the art at the time the invention was made to have used either of the MRF or ERF in Kai's system to achieve the same result of dampening.

Re: claim 5, Kai shows a device for reducing vibrations in a rotating system, said system rotating about an axis of rotation and generating vibratory loads, as in the present invention, comprising: a housing 14 disposed in combination with the rotating system and defining an internal chamber 17, an Electro Rheological Fluid (ERF) disposed in said chamber, and speed sensing means for sensing the rotational velocity of said rotating system, as mentioned in the Abstract wherein the shaft's rotational speed is temporally reduced, and issuing speed signals indicative thereof, drive means for driving said housing about said rotational axis, inherently there would be a drive means to drive the housing since a centrifugal force is mentioned in the Abstract; signal processing means, a control device to determine which electrode plates 18 to be energized as mentioned in the Abstract, responsive to said speed signals, for issuing control signals indicative of an ERF distribution within said housing; and a means 18, responsive to said speed control signals, for distributing said MRF within said chamber for reducing said vibratory loads active in said rotating system. Kai lacks the Magneto Rheological Fluid (MRF). The Examiner takes an Official Notice that ERF and MRF are considered equivalents in the art of dynamic dampening; and it would have been within the skills of a person in the art at the time the invention was made to have used either of the MRF or ERF in Kai's system to achieve the same result of dampening.

Re: claim 7, Kai's system, as rejected in claim 5, is silent of the disclosure of a speed signal provided by an electric power generator. It is old and well known that an electric power generator would inherently comprise a rotating shaft wherein the rotational speed of said shaft proportionally corresponds to the rotational speed of the power generator.

Re: claim 8, Kai shows an active force generation device for reducing vibrations in a rotating system, as in the present invention, said system rotating about an axis of rotation and generating vibratory loads, comprising: a housing 14 disposed in combination with the rotating system and defining an internal chamber 17; an Electro Rheological Fluid (ERF) disposed in said chamber, means for generating variable flux electromagnetic field, the voltage, within said chamber for changing the viscous properties of said ERF; means 18 for effecting redistribution of said ERF within said chamber, means for driving said housing about said rotational axis, inherently since the Abstract mentioned a centrifugal force; speed sensing means for sensing the rotational velocity of said rotating system and issuing speed signals indicative thereof, inherently since a temporarily reduction of the speed is mentioned in the Abstract while the control device is generating signals to energize only a certain plate 18 to modify the unbalance of the shaft; vibration sensing means for sensing vibrations active in said rotating system and issuing vibration signals indicative thereof; as mentioned in the Abstract; signal processing means, the control device, responsive to said speed and vibration signal, for issuing control signals to said flux generation, ERF redistribution and drive means to reduce said vibrations active in said rotating system, as disclosed in the

Abstract. Kai lacks the Magneto Rheological Fluid (MRF). The Examiner takes an Official Notice that ERF and MRF are considered equivalents in the art of dynamic dampening; and it would have been within the skills of a person in the art at the time the invention was made to have used either of the MRF or ERF in Kai's system to achieve the same result of dampening.

14. Claims 4, 6, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kai in view Applicant's admitted prior art in page 2 of the specification of the instant application.

Re: claims 4, 6 and 9, Kai's system, as rejected in claim 1, lack the disclosure of an environment for said system to be used in. Kai's system is to dampen the vibrations in a rotating shaft and would be capable of dampening vibrations in a rotating shaft of a helicopter with a well-known calculation for vibration as admitted by Applicant. It would have been an obvious expedience for one of ordinary skill in the art at the time the invention was made to have used Kai's dampening system in a helicopter to dampen the vibrations in the rotating shaft using a well known calculation for vibration as admitted by Applicant since Kai's system can be used to modify the unbalance in the shaft in real time.

Re: claim 10, Kai's system, as rejected in claim 9, is silent of the disclosure of a speed signal provided by an electric power generator. It is old and well known that an electric power generator would inherently comprise a rotating shaft wherein the rotational speed of said shaft proportionally corresponds to the rotational speed of the power generator.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Litte et al. show a viscous damper using MRF partially filled in a hollow chamber in figure 1. Brotz shows a viscous dynamic damper using ERF in figure 14. Karasawa shows a viscous dynamic damper using MRF in figure 3.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Nguyen whose telephone number is 703-308-8347. The examiner can normally be reached on M-F, 8 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on 703-308-3421. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lan Nguyen
Patent Examiner
Art Unit 3683

Lan Nguyen
10/8/04